3. Subbasin Assessment–Pollutant Source Inventory

Riparian destruction initiates the rise in stream temperatures and sedimentation to the streams in the Beaver-Camas Subbasin. As riparian vegetation is removed, the shade provided by the vegetation decreases and streambanks begin to erode. The reduction in shade further decreases the stability of streambanks and increases the thermal loading to the stream. This type of pollution occurs over a wide area and is considered nonpoint source pollution.

3.1 Sources of Pollutants of Concern

Point Sources

There are no Superfund or Resource Conservation Recovery Act (RCRA) sites in the Beaver-Camas Subbasin. There are no national pollution discharge elimination system (NPDES) permitted point sources, nor are there any potentially unpermitted point sources in this area. Since there are no known point sources, no waste load allocations (WLA) will be developed for point sources.

Nonpoint Sources

The primary sources of nonpoint source pollution to streams in the Beaver-Camas Subbasin are sediment from streambank erosion and solar radiation from riparian habitat destruction. As near-stream vegetation is degraded, overall stream cooling is reduced. There is a direct relationship between streambank erosion and loss of riparian vegetation. As stabilizing vegetation is removed, streambanks become unstable and bank erosion follows. As streambank erosion progresses, depositional features form in the channel that redirect current and further reduce bank stability. This process continues until the stream forms a new flood plain and deposition forms new streambanks that become colonized with stabilizing vegetation. This process can take many years to play out once channel alteration begins. As near stream vegetation is degraded overall stream cooling is reduced. In addition, channel morphology is highly influenced by land cover by affecting the floodplain and instream roughness, which, in turn, influences bank stability, stream substrate composition, and sedimentation.

Land use, as previously discussed, is primarily agricultural adjacent to streams impaired by temperature and sediment. The agricultural use that has the greatest effect on streambank stability is grazing. Grazing occurs throughout the subbasin in riparian areas.

Other sources of nonpoint source sediment pollution can include roads and erosion from cultivated fields.

Pollutant Transport

The bulk of the sediment comes from streambank erosion during several weeks of high spring flow. However, in some instances, the transport and delivery of pollutants within and

between perennial streams is limited because of the lack of connectivity between streams. Some streams infiltrate, or are diverted before they have confluence with other surface waters, even during snowmelt. Groundwater transport of pollutants has not been shown to be a significant conduit of pollutants

As riparian vegetation is removed from the stream, the stream cooling capabilities of that vegetation is reduced and solar radiation increases. Stream temperatures are cumulative where the conditions at a site contribute to heating of already heated water.

3.2 Data Gaps

Point Sources

There are no point sources in this subbasin.

Nonpoint Sources

Additional data collection should include more quantitative trend monitoring related to rangeland and riparian interface areas on perennial streams. The primary fishery concern, due to the isolation of perennial streams and the lack of connectivity with other surface waters, would be the impact from any particular catastrophic event on the streams supporting a Yellowstone cutthroat trout population. The greatest risk would be from sediment inputs related to extreme hydrologic events and the cumulative impacts from streambank erosion. Trend data related to grazing impacts is also lacking. Additionally, data related to trends in geomorphology and riparian vegetation physical structure would be useful to determining long term risks associated with grazing.